

CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1 1. (currently amended) A computer implemented method for verifying a design
2 for an interconnect fabric, the design including an arrangement of interconnect
3 elements for interconnecting a plurality of network nodes and the design having
4 requirements for a plurality of flows among the network nodes, and the method
5 comprising:
6 selecting a flow from the plurality of flows;
7 performing a sequence of steps for each of the plurality of the selected
8 flows, the ~~method~~ sequence comprising associating the selected flow with a path
9 for the selected flow through the interconnect fabric; and, for each interconnect
10 element in ~~each the~~ path, aggregating requirements associated with the selected
11 flow with requirements for each of the corresponding flows selected previously
12 and determining whether the aggregated requirements exceeds a capacity of the
13 interconnect element; and
14 repeatedly selecting a flow that has not yet been selected from the plurality
15 of flows and performing the sequence of steps until each of the flows of the
16 plurality has been selected or a negative determination is reached.

1 2. (original) The method according to claim 1, wherein the interconnect elements
2 include interconnect devices and links.

1 3. (original) The method according to claim 2, wherein the interconnect devices
2 are selected from the group consisting of switches and hubs.

1 4. (original) The method according to claim 3, wherein when the interconnect
2 devices includes a hub, the method further comprises identifying an extent of a
3 domain of hub connected components.

1 5. (original) The method according to claim 4, wherein said identifying the
2 extent of the domain of hub connected components comprises performing a depth
3 first search of the interconnect fabric for the hub connected components.

1 6. (currently amended) The method according to claim 5, wherein said
2 identifying an extent of a domain of hub connected components comprises
3 constructing a tree data structure wherein a hub occupies a position in the tree and
4 ~~a~~ other interconnect elements connected to the hub occupy positions in the tree
5 one level down from the hub.

1 7. (original) The method according to claim 1, wherein the aggregated
2 requirements include bandwidth requirements.

1 8. (original) The method according to claim 7, further comprising aggregating
2 requirements of ports for each of the plurality of flows and determining whether a
3 number of available ports of one or more of the interconnect elements is exceeded
4 by the aggregated requirements of ports.

1 9. (original) The method according to claim 1, wherein the aggregated
2 requirements include a number of ports.

1 10. (original) The method according to claim 1, said method further comprising
2 determining whether a flow corresponds to a valid path through the interconnect
3 fabric, a valid path starting at a source node for the flow, terminating at an end
4 node for the flow and passing through a contiguous subset of the interconnect
5 elements.

1 11. (original) The method according to claim 10, further comprising rejecting the
2 design if it does not include a valid path for each flow.

1 12. (original) The method according to claim 1, wherein said associating
2 comprises assigning a flow to a primary path in the design and further comprising
3 assigning the flow to a backup path in the design to determine whether the design
4 has capacity for the flow in the primary path and the backup path simultaneously.

1 13. (currently amended) The method according to claim 1, wherein said
2 associating comprises assigning a flow to a backup path for the flow in the design
3 to determine whether the design has capacity for the flow in the backup secondary
4 path in event of a failure in a primary path for the flow.

1 14. (currently amended) A system for verifying a design for an interconnect
2 fabric comprising:
3 a set of design information including requirements for a plurality of flows
4 and a design specification wherein each of the plurality of flows is associated with
5 a path for the flow through the interconnect fabric; and
6 a fabric design verification tool that, selects a flow from the plurality of
7 flows, performs a sequence of steps for the selected flow, the sequence
8 comprising each interconnect element in each path, aggregating requirements
9 associated with ~~each of the selected flow with requirements for each of the~~
10 ~~corresponding flows~~ selected previously and ~~determining~~ whether the
11 aggregated requirements exceeds a capacity of the interconnect element and
12 wherein the fabric design verification tool repeatedly selects a flow that has not
13 yet been selected from the plurality of flows and performs the sequence of steps
14 until each of the flows of the plurality has been selected or a negative
15 determination is reached.

1 15. (original) The system according to claim 14, wherein the interconnect
2 elements include interconnect devices and links.

1 16 (original) The system according to claim 15, wherein the interconnect devices
2 are selected from the group consisting of switches and hubs.

1 17. (original) The system according to claim 16, wherein when the interconnect
2 devices includes a hub, the design verification tool identifies an extent of a
3 domain of hub connected components.

1 18. (original) The system according to claim 17, wherein the design verification
2 tool identifies the extent of the domain of hub connected components by
3 performing a depth first search of the interconnect fabric for the hub connected
4 components.

1 19. (original) The system according to claim 18, wherein the design verification
2 tool identifies an extent of a domain of hub connected components by
3 constructing a tree data structure wherein a hub occupies a position in the tree and
4 a other interconnect elements connected to the hub occupy positions in the tree
5 one level down from the hub.

1 20. (original) The method according to claim 14, wherein the aggregated
2 requirements include bandwidth requirements.

1 21. (original) The system according to claim 20, wherein the design verification
2 tool aggregates requirements of ports for each of the plurality of flows and
3 determines whether a number of available ports of one or more of the interconnect
4 elements is exceeded by the aggregated requirements of ports.

1 22. (original) The method according to claim 14, wherein the aggregated
2 requirements include a number of ports.

1 23. (original) The system according to claim 14, wherein the design verification
2 tool determines whether a flow corresponds to a valid path through the
3 interconnect fabric, a valid path starting at a source node for the flow, terminating

4 at an end node for the flow and passing through a contiguous subset of the
5 interconnect elements.

1 24. (original) The system according to claim 23, wherein the design verification
2 tool rejects the design if it does not include a valid path for each flow.

1 25. (original) The system according to claim 14, wherein the design verification
2 tool assigns a flow to a primary path in the design and also assigns the flow to a
3 backup path in the design to determine whether the design has capacity for the
4 flow in the primary path and the backup path simultaneously.

1 26. (original) The system according to claim 14, wherein the design verification
2 tool assigns a flow to a backup path for the flow in the design to determine
3 whether the design has capacity for the flow in the backup path in event of a
4 failure in a primary path for the flow.